

THE JOURNAL OF AGRICULTURAL SCIENCE

EDITED BY

G. D. H. BELL, B.SC., PH.D., Plant Breeding Institute, Cambridge

G. W. COOKE, PH.D., F.R.I.C., Rothamsted Experimental Station, Harpenden

R. E. EVANS, M.SC., PH.D., School of Agriculture, Cambridge

SIR JOHN HAMMOND, C.B.E., D.SC., F.R.S., School of Agriculture,
Cambridge

PROF. SIR J. B. HUTCHINSON, C.M.G., SC.D., F.R.S., School of Agriculture,
Cambridge

SIR BERNARD KEEN, D.SC., F.R.S., 72 Eaton Square, London, S.W. 1

H. L. PENMAN, O.B.E., PH.D., F.R.S., Rothamsted Experimental Station, Harpenden

SIR E. JOHN RUSSELL, D.SC., F.R.S., Campsfield Wood, Woodstock, Oxon.

E. W. RUSSELL, C.M.G., PH.D., F.INST.P., East African Agriculture and
Forestry Research Organisation, P.O. Box 21, Kikuyu, Kenya

F. YATES, C.B.E., SC.D., F.R.S., Rothamsted Experimental Station, Harpenden



CAMBRIDGE UNIVERSITY PRESS

BENTLEY HOUSE, 200 EUSTON ROAD, LONDON, N.W. 1

AMERICAN BRANCH: 32 EAST 57TH STREET, NEW YORK 22, N.Y.

Price 27s. 6d. net

(U.S.A. \$4.75)

MICHROME STAINS

and Reagents for Biology

OVER 3000 available

Magneson II	Lipid Crimson
Aquamount	Thiofluorescein
Brilliant Cresyl Blue	Sudan Black
Bromelain	Matamoumt
Laktoseal	Trifalgic acid
Urease, etc.	

104-page catalogue on request

New books by Edward Gurr

STAINING ANIMAL TISSUES, 637 pages, 84/-

ENCYCLOPAEDIA OF MICROSCOPIC

STAINS, 500 pages, price 95/-

Ready shortly: "Intelligent Use of Dyes in Biology & General Staining Methods", about 450 pages, price about 80/-.

EDWARD GURR LTD.

42 UPPER RICHMOND RD. WEST,
LONDON, S.W. 14

Telegrams: Micromlabs, London, S.W. 14
Telephones: PROspect 7606 and 8051

CROP SCIENCE

Crop breeders, plant geneticists and physiologists, and workers in related areas will find *Crop Science* a source of valuable articles in their branches of science. This bimonthly journal carries reports of research in the genetics, physiology, ecology, breeding and management of field crops, turf-grasses, pastures and ranges, and in seed technology. It is published by the Crop Science Society of America.

\$14.00 per year in U.S. and Canada.

\$15.00 per year elsewhere.

Crop Science Society of America
677 S. Segoe Rd,
Madison 11, Wisconsin, U.S.A.

ANIMAL BREEDING

JOHN HAMMOND, Kt.

'Sir John Hammond is one of the greatest authorities in the world on animal breeding, and the National Federation of Young Farmers' Clubs were fortunate and privileged that he agreed to write a book on the subject for them. The aim of the book is to link the science of animal breeding with the practical... It should prove attractive to anyone who has wanted to learn the elements of genetics but who has been daunted by the forbidding look of most of the standard works.' *Farming News*.

8s. net

BIOLOGY OF PLANT NEMATODES

H. R. WALLACE

Previous books dealing with plant nematodes have been concerned mainly with the taxonomy or with the diseases nematodes cause and this is the first attempt to draw together what is known of their biology. It includes a summary of the current understanding of their behaviour, ways of multiplication, movement and survival.

50s. net

THE DAIRY COW

Reproduction; Genetics; Nutrition; Habitat; Principal Diseases

C. CRAPLET

A comprehensive study of all aspects of the dairy cow, which also offers a valuable commentary on trends in veterinary science over the past 50 years. The reader can see developments in their historical perspective, and the advantages and disadvantages of different methods can be appreciated. The author's wide experience is evident and he has marshalled his knowledge in an orderly manner, with frequent summaries in the form of tables.

'Any veterinary surgeon in country practice will find this book invaluable.'

The Veterinary Record. £6. 10s. net

INTRODUCTION TO PROTOZOLOGY

R. D. MANWELL

'Instead of overfacing the student with names and minutiae of anatomy, Professor Manwell engages his attention by discussing those aspects of protozoology which are either of fundamental biological importance or relevant to human welfare. As the author is one of the World's foremost authorities on malaria, it is not surprising that much of the book is concerned with protozoa that cause disease in man or in domestic animals.' *The Guardian*.

60s. net

EDWARD ARNOLD

41 Maddox Street, London, W. 1

THE EMPIRE JOURNAL OF EXPERIMENTAL AGRICULTURE

THIS JOURNAL offers agricultural research workers a medium for disseminating the records and results of their investigations on the feeding and management of livestock, cultivation and manuring of crops, trial of farm machinery, agricultural economics, and experimental techniques.

Vol. XXXI No. 125

CONTENTS

January 1964

- A. B. HEARN and R. A. WOOD: Irrigation-control Experiments on Dry-season Crops in Nyasaland.
- D. J. PRATT: Bush-control Studies in the Drier Areas of Kenya. I. Preliminary work with the Holt Machines.
- F. YATES, A. J. VERNON and S. W. NELSON: An Example of the Analysis of Uniformity Trial Data on an Electronic Computer.
- H. C. PEREIRA, M. DAGG and P. H. HOSEGOOD: A Tillage Study in Kenya Coffee. IV. The Physical Effects of Contrasting Tillage Treatments over Thirty Consecutive Cultivation Seasons.
- L. J. FOSTER: Some Recent Technical Advances in the Culture of Arabica Coffee in Nyasaland.
- R. K. CUNNINGHAM: Micro-Nutrient Deficiency in Cacao in Ghana.
- E. CRESSWELL, W. THOMSON and J. C. GILL: The Effect of Shelter and of Tallow Dressing of the Fleece on Fattening Scottish Blackface Lambs.
- E. CRESSWELL, W. THOMSON, J. C. GILL and R. W. ASH: A Preliminary Trial of a Variant of the Bert Kelly Method for the production of Teaser Rams, and an Exploratory Experiment on its Possible Value for Increasing Meat Production.
- G. D. PHILLIPS and G. H. LAMPKIN: Pasture Intake and Digestibility Studies with European and Zebu Cows.
- H. J. GOODING and J. S. CAMPBELL: The Improvement of Sweet-Potato Storage by Cultural and Chemical Means.
- N. R. BROCKINGTON: Fertilizer Responses of Giant Rhodes Grass (*Chloris Gayana*, Kunth) in Northern Rhodesia.
- R. L. FOX, A. AYDENIZ and B. KACAR: Soil and Tissue Tests for Predicting Olive Yields in Turkey.
- B. A. C. ENYI: Note on the Effect of Fertilizers and Soil Cover on Submerged Pregerminated Rice Seeds.

Royal 8vo. 20s. net. Annual subscription (four numbers) 60s. (\$9.00) post free.

OXFORD UNIVERSITY PRESS

AMEN HOUSE, LONDON, E.C.4

JOURNAL OF REPRODUCTION AND FERTILITY

The Journal publishes original papers, abstracts of Proceedings, and occasionally reviews and bibliographies, dealing with the morphology, physiology, biochemistry and pathology of reproduction in man and animals, and with the biological, medical and veterinary problems of fertility and lactation. Numbers are issued bimonthly to give two volumes a year.

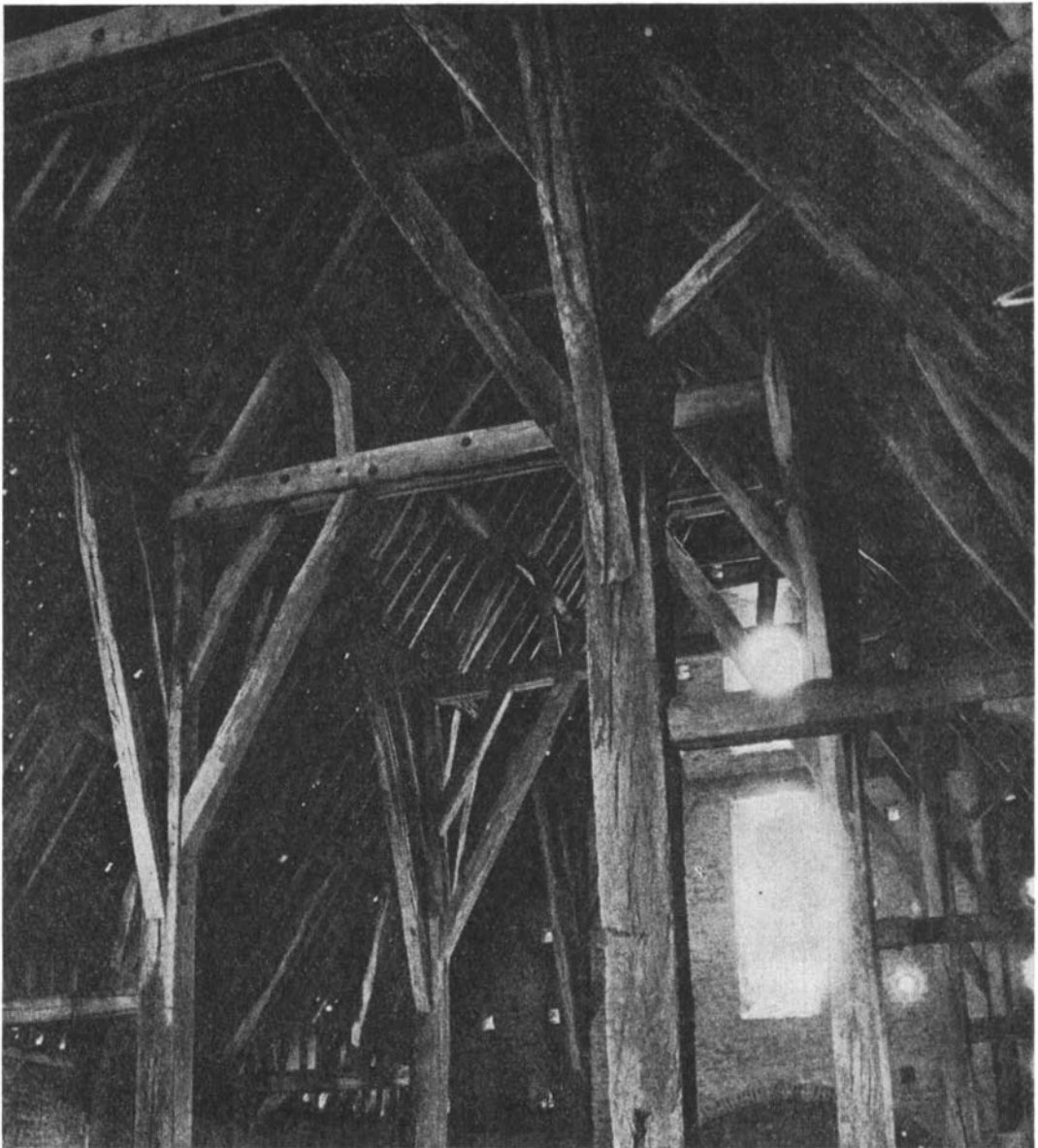
Papers to appear during 1964 include:

- B. HENRICSON and L. BÄCKSTRÖM. A systematic study of the meiotic divisions in normal and subfertile or sterile boars and bulls.
- N. W. MOORE and J. N. SHELTON. Response of the ewe to a horse anterior pituitary extract.
- D. P. MUKHERJEE. Melanizing activity of semen and its relation to live spermatozoa of bulls, goats and rams.
- N. W. MOORE and J. N. SHELTON. Egg transfer in sheep. Effect of degree of synchronisation between donor and recipient, age of egg, and site of transfer on the survival of transferred eggs.
- D. R. LAMOND. Quantitative studies of the interaction between progesterone and pregnant mare serum on ovarian function in the ewe.
- J. MCC. HOWELL, J. N. THOMPSON and G. A. J. PITT. Histology of the lesions produced in the reproductive tract of animals fed a diet deficient in vitamin A alcohol but containing vitamin A acid. II. The female rat.
- G. ALEXANDER. Studies on the placenta of the sheep (*Ovis ovies* L.): placental size.
- G. ALEXANDER. Studies on the placenta of the sheep (*Ovis ovies* L.): effect of surgical reduction in the number of caruncles.
- J. C. DANIEL and J. H. LEVY. The action of progesterone as a cleavage inhibitor of rabbit ova *in vitro*.
- L. NELSON. Acetylcholinesterase in bull spermatozoa.
- C. A. FINN. Influence of the male on litter size in mice.

Editorial correspondence should be sent to Dr C. R. Austin, Physiological Laboratory, Downing Street, Cambridge, England, and business correspondence to the publishers.

*The subscription rate is 70s. per volume or £7 per year (two volumes).
U.S.A. and Canada \$12.00 per volume or \$24.00 per year*

**BLACKWELL SCIENTIFIC PUBLICATIONS
OXFORD**



Built 1250—Vapona 1964... insects controlled easily at last!

Vapona is Shell's latest insecticide. It vaporises. Permeates every insect concealing crevice up to one hundred feet from release. Easily handled. DDVP based Vapona can be simply applied by sprinkling; or can be fogged, sprayed or metered. Effective. Vapona kills even resistant strains; and there is no reported resistance build-up to DDVP. Versatile. Vapona clears insects from food stores, dairies, live-stock, airplanes, warehouses, ships, beaches, rubbish dumps. In fact from almost anywhere. Yet it breaks down quickly, leaving no taint, no odour. Vapona is just one of Shell's comprehensive group of insecticides, which between them provide an effective answer to insect problems in every continent.

VAPONA

Shell Chemicals



For further information and details of Shell's technical service please consult your Shell company.